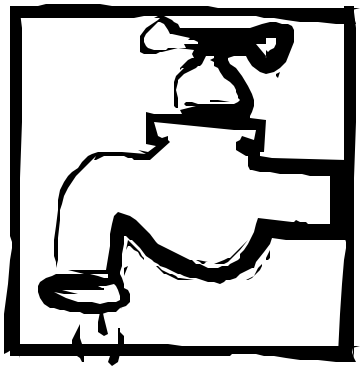
Southwest Washington Health District

SOUTHWEST WASHINGTON HEALTH DISTRICT'S DRINKING WATER NEWS

WATER LINES



Issue 1, Volume 1—*April 30, 2001*

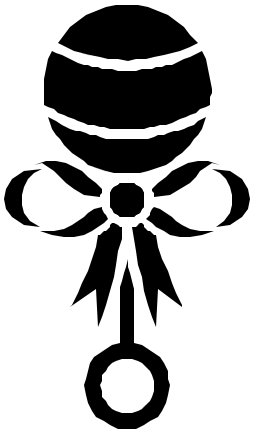
INSIDE THIS ISSUE:

Special points of interest:

- Earthquakes can damage your well and effect your drinking water
- If your well appears damaged, get a licensed well contractor to evaluate your well and find an alternate source of drinking water
- Barring damaged well casings, changes in water clarity seem temporary.
- Have your well water tested, the tests are inexpensive

DID THE RATTLE IN SEATTLE EFFECT YOUR WELL?

It's not uncommon for well owners to report that they noticed a change, even a temporary difference, in their water source following an unusual natural event such as an earthquake. The February 29, 2001 trembler that rocked the Puget Sound region and was felt over much of the Northwest, was no exception. Within hours of feeling the initial rolling and shaking, numerous callers to the Southwest Washington Health District inquired if the abrupt changes noted in their well water would present a threat to their health. The reported changes had a common theme, the water from the well was noticeably cloudy, and in some cases fine sediment was present. In addition, some individuals felt their drinking water had developed a different taste. While there have been no indications that the cloudy water posed a health concern, each caller was advised to inspect their system for visible damage, and to consider collecting water samples for a potability test. If physical damage to the well was suspected, they were told to obtain an alternate source of drinking water while a licensed well contractor evaluated the situation.



Why would something as rugged as a water well be effected by an earthquake?

The typical well employs joined sections of strong steel casing pipe to hold the well bore open unless very stable layers or solid rock formations are encountered. Following the recent quake, a high priority for engineers dispatched to check for damage was to inspect areas for slope instability. Wells constructed in areas prone to landslides, even extremely slow ground movement or creep, can be adversely effected.

Shifting or sliding rock or soils can exert a great deal of pressure against the comparatively thin, flexible casing. In rare cases, sections of casing pipe or the joining welds have failed. A damaged casing could allow material to enter the well and cause the water to cloud up. Wells set in a water table recharged through a network of fractures in otherwise solid rock could also experience changes if a percentage of the fractures opened or closed following an earthquake and loose material was stirred up.

CONTINUED ON PAGE 3

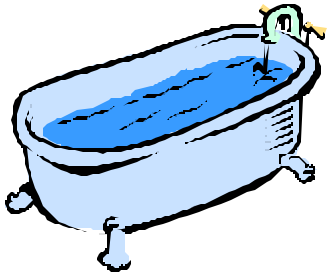
PROTECT YOUR WELL!

Use this checklist to insure proper wellhead protection:

- ☑ No sources of pollution within a 100 foot radius of the wellhead;
- ☑ Well is sited on high ground, sloped away in all directions from the well casing to divert surface runoff;
- ☑ Top of the casing or pipe sleeve has an overlapping, tight-fitting cover or sanitary seal;
- ☑ Annular space outside the well casing is sealed with cement grout or bentonite clay at least 2 inches thick to a minimum depth of 18 feet;
- ☑ Well has a pump house to protect equipment, storage tank, and piping;
- ☑ A pit-less adaptor is used instead of a well pit; and
- ☑ The wellhead protection area is under the control of the operator or protective cove-

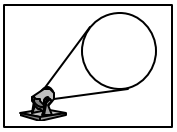
Conserve Water

Shorten up those showers. Use flow restrictors in shower heads.



Showers take less water than baths.

For lawns, brown is in! If you must wash your vehicle, park it on the lawn to catch the runoff.



Staff Spotlight

Michael McNickle, Supervisor: Michael McNickle has been with the Health District for seven months. He holds a Bachelor of Science degree in Environmental Studies from Western Washington University in Bellingham, Washington. He is a certified food safety professional and a Registered Sanitarian. His previous experience includes work with the Bremerton-Kitsap County Health District.

Joan Lacey, Environmental Health Specialist: Joan has been with the Health District for seven months. Her background is in laboratory science and she holds a degree in Environmental Management from Concordia University in Portland.

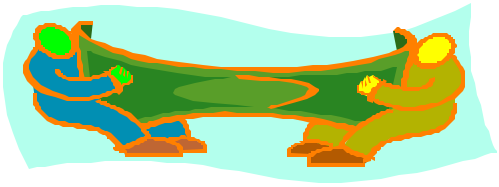
Paul Greenwalt, Environmental Health Specialist: Paul's background includes over eight years experience in the field of Environmental Health. He holds a Bachelor of Science degree in Resource Management from Oregon State University.

Bruce Scherling, Environmental Health Specialist: Bruce was recently hired for our Skamania County position. Bruce holds a Bachelor of Science degree in Civil Engineering from the University of Idaho. His extensive background in the environmental field includes work in both the private and public sectors.

Great News...No Fee Increases This Year!

Southwest Washington Health District will not increase fees in 2001 for the Drinking Water Program. Here are the fees:

- Group B Water Supply Review/Approval: $516
- WAVE or Health Authority Reports (WAVE and Septic): $415
- Health Authority reports (Water System Only): $239
- Follow-up inspections for WAVE, Group B System, or Health Authority Reports and Irrigation Well: $88
- Decommissioning Fee for Well: $50
- Irrigation Well Evaluation: $389
- Group B or WAVE Update: $113



Conservation Proclamation

On March 14, 2001 Governor Gary Locke declared a drought emergency from the dry swimming area of Alder Lake, normally under 12 feet of water.

Southwest Washington Health District ensures safe, reliable drinking water in Clark and Skamania Counties by regulating public water systems. Drought conditions have a major impact on Washington water providers. We are concerned about statewide drought conditions and are working with water utilities on drought planning and response activities.

Drought conditions create a major natural resource challenge. We all have to work together to balance the water needs of people, fish, agriculture and energy production.

We urge water purveyors to act now to begin working with their customers and others on water conservation and other measures to address the drought.

DID THE RATTLE IN SEATTLE EFFECT YOUR WELL? CONT. FROM COVER PAGE

How could the water become cloudy even if there were no apparent physical changes to the well or the area it is located in?

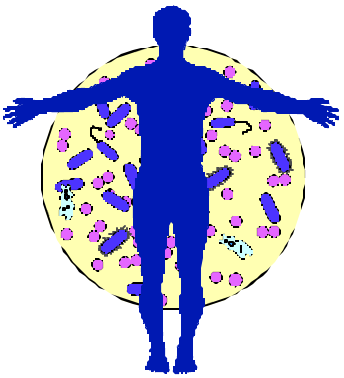
It is difficult to picture the water standing in a well being agitated such that fine materials become suspended and turn the water cloudy. However, this occurrence may explain some of the questions raised following the earthquake. Many area wells encounter water-bearing formations that contain a percentage of clay. The extremely small size of these particles permits a small amount of energy to stir them up.

Clays can remain in suspension for long periods, but eventually they settle out or become less mobile by attaching to a larger surface.

Non-coliform, "slimy" bacteria are very widespread in southwest Washington wells. It is unknown whether these microbial organisms are naturally occurring or are introduced, but it is clear they present a nuisance. The most common forms of "iron bacteria" induce changes in the chemical state of iron (and manganese) dissolved in groundwater. The bacteria gain energy from this process, and the colony grows. As a by-product, tiny rust-like particles and coatings accumulate in large quantities in the resulting slimy growth. The mucous-like slimes coat all surfaces they can adhere to, with some varieties forming extensive feathery growths. In rare cases, the explosive growth rate of iron bacteria can render a well useless in a short period of time. It is possible that during the jostling of an earthquake some of the delicate bacteria growth and accumulated fine rust particles are stirred up, thereby clouding the water until settling takes place. Iron bacteria themselves have not been shown to be harmful organisms to humans.

"peace of mind is as easy as having the water analyzed."

After the quake, callers to the Health District reported that the cloudy water had begun suddenly and was diminishing with time. Many also described the cloudiness as red to orange in color. Since "iron bacteria" can influence the amount of oxygen and other gases that may be dissolved in the water, slight scent and taste changes could be noticeable if these organisms were disturbed. These observations suggest that the disturbance of microbial growth or the by products of growth could have resulted in the cloudiness reported in some water wells.

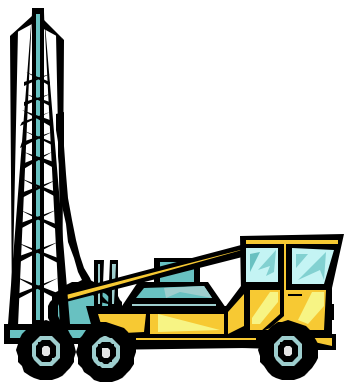


If you are one of those owners that noticed a change in your drinking water, or even if you did not, peace of mind is as easy as having the water analyzed. Testing a water sample for coliform bacteria or "potability" testing is inexpensive, and is a measure of a well's vulnerability to contamination by microbial organisms in general.

DISINFECTION FOR WELLS

To better service your customer and the public we are asking well drillers and pump installers to add chlorine disinfectant at an amount consistent with Table 1 on page 4.

The Health District must purge a well of any chlorine residual prior to collecting a water sample for bacterial testing. This process can be very time consuming when large amounts of chlorine are applied to the well for disinfections.



Our practice is to spend up to an hour at a site purging the well. If we are unable to reduce the chlorine residual to a non-detectable level within that time, we notify the owners so they can complete the purging of the well, or we will do it as our schedule allows. This obviously can become an inconvenience for the public and us, and cost your customer valuable time.

"we are asking well drillers and pump installers to add chlorine disinfectant consistent with Table 1 on page 4"

It is our belief that together we can better serve the public if:

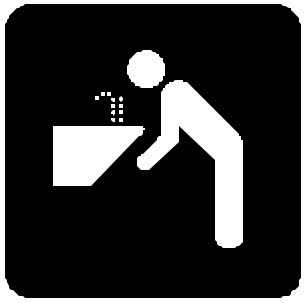
1. The well is disinfected at the recommended chlorine concentration,

Southwest Washington Health District

Environmental Health
P.O. Box 1870
2000 Fort Vancouver Way
Vancouver, Washington 98663

Phone: (360) 397-8428
Fax: (360) 397-8084

We're on the web!
www.swwhd.wa.gov



Web Sites:
Southwest Washington Health District
www.swwhd.wa.gov

Washington State Division of Drinking Water
www.doh.wa.gov/ehp/dw

Environmental Protection Agency, Office of Ground Water/Drinking Water
www.epa.gov/OGW/DW

Association of State Drinking Water
www.asdwa.org

Phone Numbers:
EPA State Drinking Water Administrators Hotline
1-800-426-4791

DISINFECTION FOR WELLS CONT. FROM PAGE 3

2. After a minimum of a 24 hour contact time, the well is purged of chlorine to 1 ppm by the well driller, pump installer, or property owner representative and,
3. SWWHD is notified that the well is ready for sampling.

TABLE 1

Based on a 100 ppm residual, full well and use of 5.25% sodium hypochlorite.

DEPTH (in feet)	GALLONS OF BLEACH REQUIRED
80	0.23
160	0.47
240	0.70
320	0.93
400	1.16
480	1.40
560	1.63
640	1.86